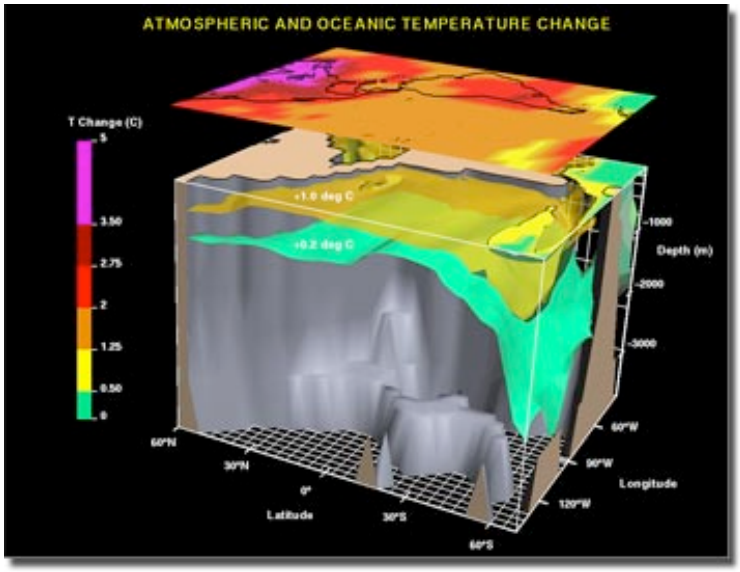
LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: July 28-Aug. 4, 2008.

Computer models simulate climate change



Three-dimensional view of projected surface air temperature and ocean warming due to greenhouse gases as calculated by a low-resolution GFDL coupled ocean-atmosphere climate. Courtesy NOAA

Livermore scientists, as part of the U.S. Climate Change Science Program, have released a report on computer

climate models and their ability to simulate current climate change.

Using some of the most powerful computers in the world, scientists use mathematical models of the Earth's climate to examine hypotheses about past and present-day climates. Climate simulations along with improved observations are merged into coherent projections of future climate change.

Lab scientists David Bader and Curt Covey are major contributors to the report. The report is one in a series of 21 reports to advance climate science research.

To read the report, go to http://www.climatescience.gov/Library/sap/sap3-1/final-report

LLNL receives additional funds for environmental cleanup

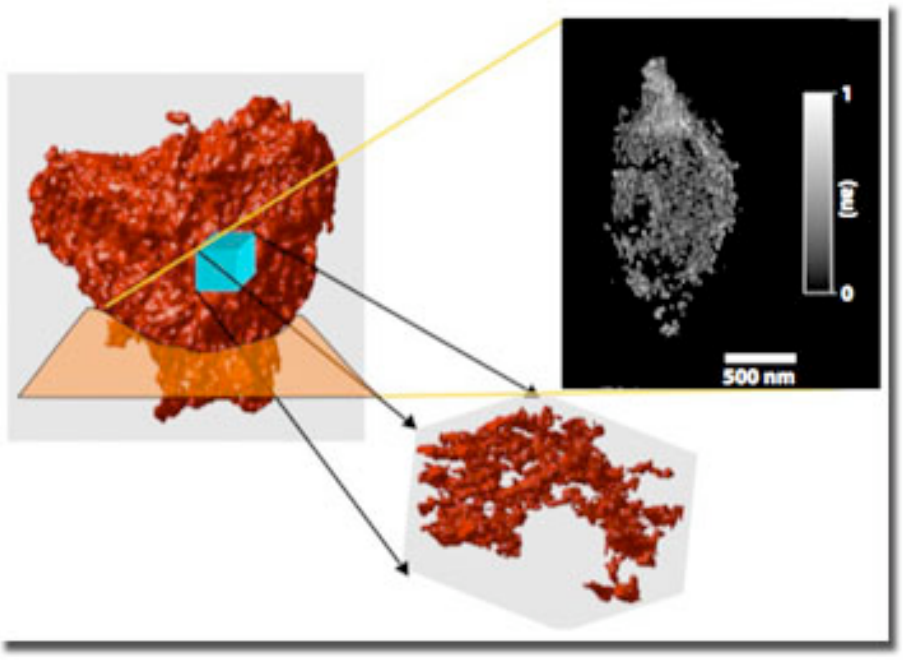
The National Nuclear Security Administration's (NNSA) site office overseeing Lawrence Livermore National Laboratory announced recently that it has received approval for a budgetary shift of more than $6 million to help pay for continued environmental restoration activities at the Lab.

"We are very pleased that the Congress worked with NNSA

to restore essential cleanup funding at Lawrence Livermore National Laboratory," said Livermore Site Office Manager Camille Yuan-Soo Hoo. “These funds will allow us to continue our successful comprehensive master plan to clean up the Laboratory site as efficiently as possible without any significant impacts to the effectiveness of the remediation," she said. “Although some aspects of the cleanup were interrupted temporarily for a short period of time, the delay has not resulted in any harm to the environment or the public.”

The original appropriation for cleanup activities at Lawrence Livermore National Laboratory for Fiscal Year 2008 was approximately $6 million. Recent full-year funding has been in the $12 million range.

Scientists determine strength of “liquid smoke” with 3D images



Section and isosurface rendering of a 500-nanometer cube from the interior of the 3D volume. The foam structure shows globular nodes that are interconnected by thin beam-like struts.

Researchers create a 3D image of a material dubbed “liquid smoke.”

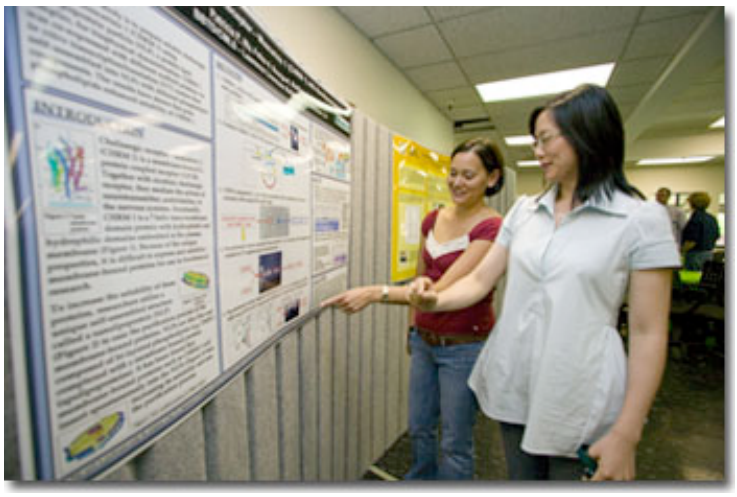
Aerogel, also known as liquid smoke or “San Francisco fog,” is an open-cell polymer with pores smaller than 50 nanometers in diameter.

For the first time, Lawrence Livermore and Lawrence Berkeley scientists have peered into this material and created three-dimensional images to determine its strength and potential new applications.

Aerogel is a form of nanofoam, an engineered material designed for high strength-to-weight ratio. Such nanofoam structures are also present in the fields of geology, phospholipids, cells, bone structure, polymers and structural materials, wherever lightness and strength are needed.

For more information, go to https://publicaffairs.llnl.gov/news/news_releases/2008/NR-08-07-05.html

LLNL recognizes teacher academy supporters



Teacher Patricia Wu (right) discusses her poster with Lab employee Feliza Bourguet at the recent Teacher Research Academy event.

Approximately 60 LLNL scientists, employees and managers were honored last week for supporting the Edward Teller Education Center's (ETEC) Teacher Research Academy.

The Lab's mentoring scientists hosted 15 science teachers as interns. LLNL employees and LLNS management supported the Edward Teller Education Center through the HOME Campaign. The Amgen Foundation also contributed to the grant, which covered stipends for teacher interns.

The Teacher Research Academy takes a unique four-step approach to introduce teachers to cutting-edge science. Each step, or level, builds upon the knowledge and skills developed in the previous steps. The level is a capstone six-week internship in a research laboratory at LLNL.

For more on the Teacher Research Academy, go to https://publicaffairs.llnl.gov/news/news_releases/2008/NR-08-06-06.html

Photo of the week

Physicist Mark Rowland operates the Lab-developed Fission Meter™, an advanced neutron source identification system to assist in the interdiction of fissionable materials, which are a critical ingredient for nuclear explosives. The technology, which has been licensed to AMTEK's Advanced Measurement Technology ORTEC Division, can be used on cargo containers and can differentiate between weapons-usable materials and other items. The detector's speed and accuracy reduces the need for intrusive inspections and minimize the impact on commerce.

LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail mailto:labreport@llnl.gov.

The Livermore Lab Report archive, including today's issue, is available at: https://publicaffairs.llnl.gov/news/lab_report/2008index.html